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Indian Standard

GLOSSARY OF TERMS FOR VALVES AND THEIR PARTS

PART III BUTTERFLY VALVES

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Indian Standard

GLOSSARY OF TERMS FOR VALVES AND THEIR PARTS

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Indian Standard

GLOSSARY OF TERMS FOR VALVES AND THEIR PARTS

PART III BUTTERFLY VALVES

0. FOREWORD

0.1 This Indian Standard (Part III) was adopted by the Indian Standards Institution on 28 August 1974, after the draft finalized by the Chemical Engineering Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 This glossary of terms, which is in many parts, has been prepared for the guidance of manufacturers and users of valves to assist them in the correct interpretation of the common terms used in the valve industry and trade. It is hoped, that this standard will help in establishing a generally recognized usage and eliminate ambiguity and confusion arising out of the individual interpretation of terms.

0.3 Figures are given after the definitions solely for the purpose of identifying the various parts of the different types of valves illustrated. The illustrations are merely examples and the purpose is not to indicate specific designs of components to which the definitions are applicable. The names of parts given in the key to figures shows the reference number used in the figures.

0.4 In the preparation of this standard assistance has been derived from BS 2591 : Part 4 : 1967 'Glossary for valves and valve parts (for fluids), Part IV Butterfly valves' issued by the British Standards Institution.

1. SCOPE

1.1 This standard defines types of, and parts for, butterfly valves.

1.2 It is not within the scope of this glossary to describe the type or form of body end connections, that is, flanged, screwed, welded, etc. However two types of valves are used in conjunction with pipe flanges, and these are as follows:

- a) Those connected directly to the pipe flanges [see Definition 01(a)].
- b) Those clamped between pipe flanges [see Definition 01 (b)].

2. TERMINOLOGY

<i>Ref No.</i>	<i>Term</i>	<i>Definition</i>
01	Butterfly Valve	A valve in which a disk is turned substantially through 90° from the closed to the open position, on an axis transverse to that of the valve ports

TYPES OF BUTTERFLY VALVE

- a) *Double Flanged Valve* A valve having flanged ends for connection to pipe flanges by individual bolting (*see* Fig. 1)
- b) *Wafer Valve* A valve for clamping between pipe flanges using through bolting (*see* Fig. 2)
- 1) *Single flange type* *See* Fig. 3A
- 2) *Lug type* *See* Fig. 3B
- 3) *Flangeless type* *See* Fig. 3C

SERVICE APPLICATIONS

- | | | |
|----|------------------------------------|---|
| 02 | Service Application | This is dependent upon the control of flow required. Valves may be suitable for : |
| | a) <i>Tight Shut-Off Service</i> | A valve primarily intended for isolation purposes, and which does not leak in the closed position |
| | b) <i>Low-Leakage-Rate Service</i> | A valve which has an allowed leakage in the closed position |
| | c) <i>Regulating Service</i> | A valve intended for regulating purposes and which may have a clearance between the disk and the body in the closed position. (a) and (b) may also be used for regulating service |

BUTTERFLY VALVE PARTS

- | | | |
|----|-------------------------|--|
| 03 | Body | The main part of the valve in which the flow of fluids is controlled |
| | a) <i>Body End Port</i> | The inlet or outlet opening at the end of the valve body |

<i>Ref No.</i>	<i>Term</i>	<i>Definition</i>
b)	<i>Body End</i>	That part of the body which is connected to the plant or installation of which the valve forms a part
1)	<i>Upstream end</i>	That part of the valve body which is on the upstream of the disk
2)	<i>Downstream end</i>	That part of the valve body which is on the downstream of the disk
c)	<i>Body Seat Port</i>	The opening in the body seat
d)	<i>Body Seat</i>	A seat with which the disk face makes contact when the valve is closed. When the body seat is formed in the body, a valve is described as having an 'integral seat'. When the body seat is formed on the body seat ring, a valve is described as having a 'renewable seat'
e)	<i>Body Boss</i>	A boss formed on the exterior of the body to provide sufficient metal to permit a tapped or other connection, for example, air release, drain, lifting, locking, etc
f)	<i>Body Tapping</i>	A tapping in the body to permit an external connection
g)	<i>Shaft Boss</i>	A boss formed on the extension of the body to support the shaft
h)	<i>Mounting Flange or Bracket</i>	A flange or bracket provided on the exterior of the body for the attachment of the valve operating mechanism
j)	<i>Body Foot</i>	A bracket formed on the body to support the valve
04	Body Components	Those parts which are associated, but not integral, with the body
a)	<i>Body Seat Ring</i>	The part, metallic or non-metallic, of a renewable seated valve, made separate from the body and secured in it, which forms the body seat
b)	<i>Body Seat Retaining Ring</i>	A ring to secure the body seat ring in the body

<i>Ref No.</i>	<i>Term</i>	<i>Definition</i>
	c) <i>Body Seat Retaining Ring Fixing</i>	Comprising studs, set screws, nuts or other components used to secure the body seat retaining ring to the body
	d) <i>Body Seat Facing</i>	A metallic or non-metallic deposit on the body or the body seat ring, of material different from them, which forms the body seat
	e) <i>Body Plug</i>	A plug for sealing a tapped hole in a body boss or body tapping [see Definitions 03 (e) and (f)]
	f) <i>Shaft Bearing</i>	A bearing inserted in the shaft boss [see Definition 03 (g)] to support the shaft
	g) <i>Body Stop</i>	A stop, which may be adjustable, to limit the travel of the disk in the body
	h) <i>Body Liner</i>	The component forming the body seat ring [see Definition 04 (a)], but extending through the valve body and which may cover all or part of the body end facing
	j) <i>Body Seat Ring Bolting</i>	Comprising studs, set screws, nuts or other components used to secure the body seat ring to the body
05	Shaft Cover	A cover used for the sealing of the non-driven end of the shaft
06	Shaft Cover Components	Those parts which are associated, but not integral, with the shaft cover
	a) <i>Shaft Cover Seal</i>	Any form of seal between the shaft cover and the body
	b) <i>Shaft Cover Bolting</i>	Comprising bolts, stud-bolts, studs, set screws and nuts used for the body/ shaft cover connection
07	Shaft Sealing	Any form of seal, which may be adjustable or non-adjustable, between the shaft and the body

<i>Ref No.</i>	<i>Term</i>	<i>Definition</i>
08	Shaft Sealing Components	Those parts which are associated with the shaft sealing
a)	<i>Shaft Seal</i>	The component which forms the shaft sealing
b)	<i>Stuffing Box</i>	(Applicable only to adjustable forms of shaft sealing.) The part of the body, or a separate component attached to it, which provides an annular space around the shaft contain the gland and the gland packing
c)	<i>Lantern Ring</i>	A spacing ring inserted in the stuffing box
d)	<i>Stuffing Box Tapping</i>	A tapping on the side of the stuffing box leading to the space provided by the lantern ring
e)	<i>Stuffing Box Boss</i>	A boss on the exterior of the stuffing box to provide sufficient metal to permit the tapping referred to in Definition 08 (d)
f)	<i>Stuffing Box Bolting</i>	Comprising bolts, stud-bolts, studs, set screws and nuts used to secure the stuffing box, where separate, to the body. This bolting may be extended to form gland bolting
g)	<i>Stuffing Box Gasket</i>	A component for effecting a fluid-tight joint between the body and a separate stuffing box
h)	<i>Gland</i>	A part which retains and/or forms a means of compressing the packing. Glands are usually of the screwed or bolted type, of one-piece or two-piece design
j)	<i>Screwed Gland</i>	The type of gland which is adjusted by a nut which engages the stuffing box
k)	<i>Gland Nut</i>	The nut of a screwed gland
m)	<i>Bolted Gland</i>	The type of gland which is adjusted by bolts, studs, set screws, etc., attached to the body or stuffing box

<i>Ref No.</i>	<i>Term</i>	<i>Definition</i>
	n) <i>One-Piece Gland</i>	A bolted design in which the gland is integral with the gland flange
	p) <i>Two-Piece Gland</i>	A bolted design in which the gland is separate from the gland flange, generally having a self-aligning feature
	q) <i>Gland Flange</i>	The flange of a bolted one-piece or two-piece gland
	r) <i>Gland Bush</i>	A bush which is inserted in a gland
	s) <i>Gland Bolting</i>	Comprising bolts, eye-bolts, stud-bolts, set screws and nuts used with bolted glands
	t) <i>Gland Packing</i>	Compressible material inserted into the stuffing box
	u) <i>Shaft Seal Retainer</i>	The component which retains a non-adjustable shaft seal
	v) <i>Shaft Seal Retainer Bolting</i>	Comprising bolts, stud-bolts, studs, set screws, and nuts used to secure the shaft seal retainer to the body
	w) <i>Shaft Seal Retainer Gasket</i>	A component for effecting a fluid-tight joint between the shaft seal retainer and the body
09	Disk	The generic term for the closing component, on which the disk face is formed, or to which the disk facing ring or disk seal is secured
	a) <i>Disk Hub</i>	A boss or housing formed on the disk to provide sufficient metal for the accommodation of the shaft
	b) <i>Disk Face</i>	The sealing surface on the disk or on the disk facing ring
10	Disk Components	Those parts which are associated, but not integral, with the disk
	a) <i>Disk Facing Ring</i>	A ring, which may be of different material from the disk, and which is secured to it, on which the disk face is formed

Ref No.**Definition**

	b) <i>Disk Seal</i>	A renewable ring made separate from the disk and secured to it, which makes contact with the body seat facing when the valve is closed
	c) <i>Disk Seal Retaining Ring</i>	A solid or segmented ring to support the disk seal and secure it to the disk
	d) <i>Disk Seal Retaining Ring Bolting</i>	Comprising studs, set screws and nuts used for securing the disk seal retaining ring to the disk
	e) <i>Disk Centralizing Device</i>	A device for centralizing the disk with respect to the body seat along the line of the shaft(s)
	f) <i>Disk Locking Device</i>	A device for locking the disk in the open or closed position
	g) <i>Disk Facing Ring Bolting</i>	Comprising studs, set screws, nuts or other components used to secure the disk facing ring to the disk
11	Shaft	<p>That part which supports and/or transmits movement to the disk</p> <p>A shaft extending completely through the disk</p> <p>Two separate shafts, one or both of which transmits movement to the disk</p> <p>Stub shaft to which operating mechanism is connected</p> <p>Other stub shaft than to which operating mechanism is connected</p> <p>Comprising the components used to secure the shaft to the disk. Examples of these are: taper pins, dowels, keys, bolts, studs and nuts</p>
12	Indicator	A device on the valve showing the position of the disk
13	Thrust Bearing	<p>A bearing to take end thrust which is caused by forces acting along the line of the valve shaft(s)</p> <p>Faces which are acted upon by the end thrust</p>

<i>Ref No.</i>	<i>Term</i>	<i>Definition</i>
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b) <i>Thrust Washer</i>	A washer, normally on the end of the non-driven shaft, which enables end thrust to be transmitted to thrust bearings
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3. TERMS OTHER THAN STANDARD USED IN THE VALVE INDUSTRY TO DESCRIBE PARTS OF BUTTERFLY VALVES LISTED IN THIS GLOSSARY

<i>Standard Term</i>	<i>Reference No. of Term</i>	<i>Terms other than Standard</i>
Body end port	03 a	Bore
Body seat port	03 c	Throat
Body stop	04 g	Disk stop, adjustable stop, adjustable stopper
Butterfly valve	01	Throttle valve
Disk	09	Blade, door, vane
Disk seal	10 b	Resilient seat ring, sealing ring
Disk seal retaining ring	10 c	Retaining ring, seal clamp ring
Shaft boss	03 g	Trunnion boss
Shaft seal retainer	08 u	End plate, gland ring
Stub shaft	11 b	Trunnion
Through shaft	11 a	Spindle
Thrust bearing	13	Thrust collar
Thrust washer	13 b	Thrust disk, thrust pad
Wafer valve	01 b	Solid ring valve

**KEY TO FIG. 1 AND 2 FOR BUTTERFLY VALVES ARRANGED
IN ORDER OF PART REFERENCES**

<i>Part Ref</i>	<i>Name of Part</i>	<i>Reference No. of Term</i>	<i>See Fig.</i>
1	Body	03	1, 2
2	Body end port	03 a	1, 2
3	Body end	03 b	1
4	Body seat port	03 c	1, 2
5	Body boss	03 e	1
6	Body tapping	03 f	1
7	Shaft boss	03 g	1
8	Mounting flange	03 h	1
9	Body foot	03 j	1
10	Body seat ring	04 a	1
11	Body seat retaining ring	04 b	1
12	Body seat retaining ring fixing	04 c	1
13	Body plug	04 e	1
14	Shaft bearing	04 f	1, 2
15	Body liner	04 h	2
16	Body seat ring bolting	04 j	1
17	Shaft cover	05	1, 2
18	Shaft cover seal	06 a	1, 2
19	Shaft cover bolting	06 b	1, 2
20	Shaft seal	08 a	1, 2
21	Stuffing box	08 b	1, 2
22	Lantern ring	08 c	1
23	Stuffing box tapping	08 d	1
24	Stuffing box	08 e	1
25	Gland	08 h	2

<i>Part Ref</i>	<i>Name of Part</i>	<i>Reference No. of Term</i>	<i>See Fig.</i>
26	Bolted Gland	08 m	1
27	One-piece gland	08 n	1
28	Gland flange	08 q	2
29	Gland bush	08 r	1
30	Gland bolting	08 s	1, 2
31	Gland packing	08 t	1, 2
32	Shaft seal retainer	08 u	1, 2
33	Shaft seal retainer gasket	08 w	1, 2
34	Disk	09	1, 2
35	Disk hub	09 a	1, 2
36	Disk face	09 b	1, 2
37	Disk facing ring	10 a	1
38	Disk seal	10 b	1
39	Disk seal retaining ring	10 c	1
40	Disk seal retaining ring bolting	10 d	1
41	Through shaft	11 a	2
42	Stub shafts	11 b	1
43	Shaft fixing	11 c	1, 2
44	Indicator	12	1, 2
45	Thrust bearing	13	2
46	Thrust faces	13 a	2
47	Thrust washer	13 b	1, 2
48	Disk centralizing device	10 e	1
49	Disk locking device	10 f	1

NOTE — The figures are pictorial only and are solely for the purpose of identifying the various features and components of the different types of valves indicated, and it is not the intention that any feature or component shown in any one illustration should be confined to the particular type of valve on which it may appear.

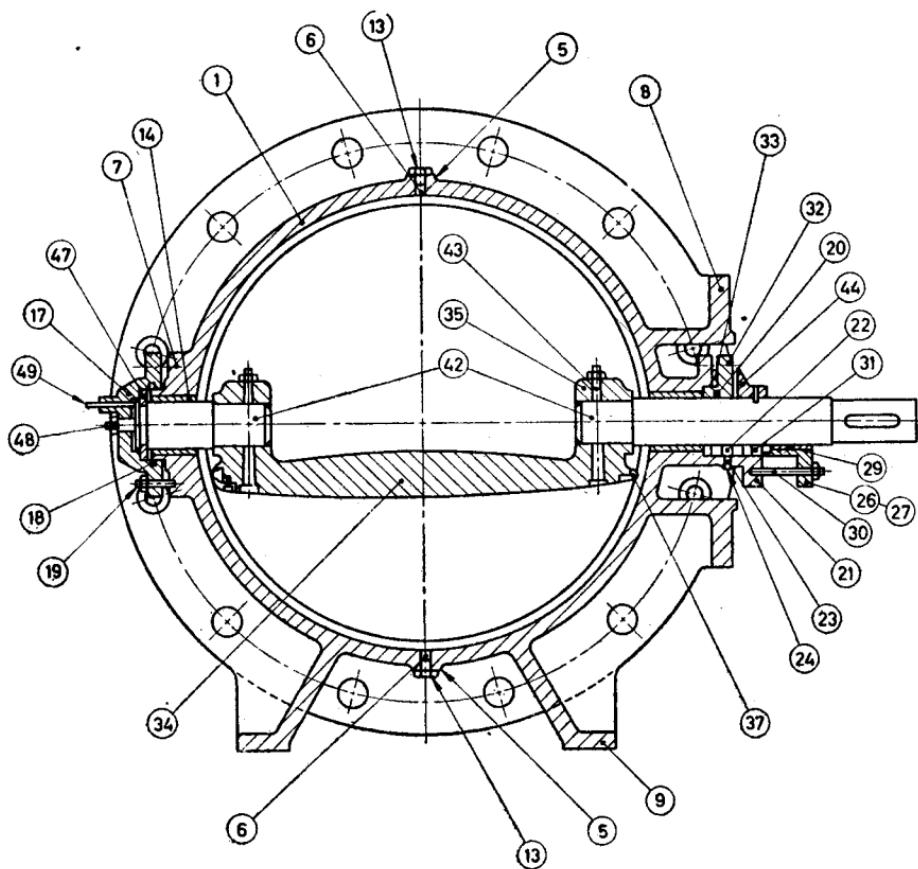
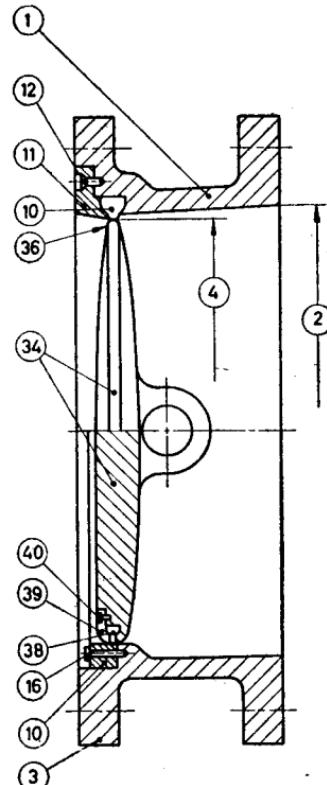
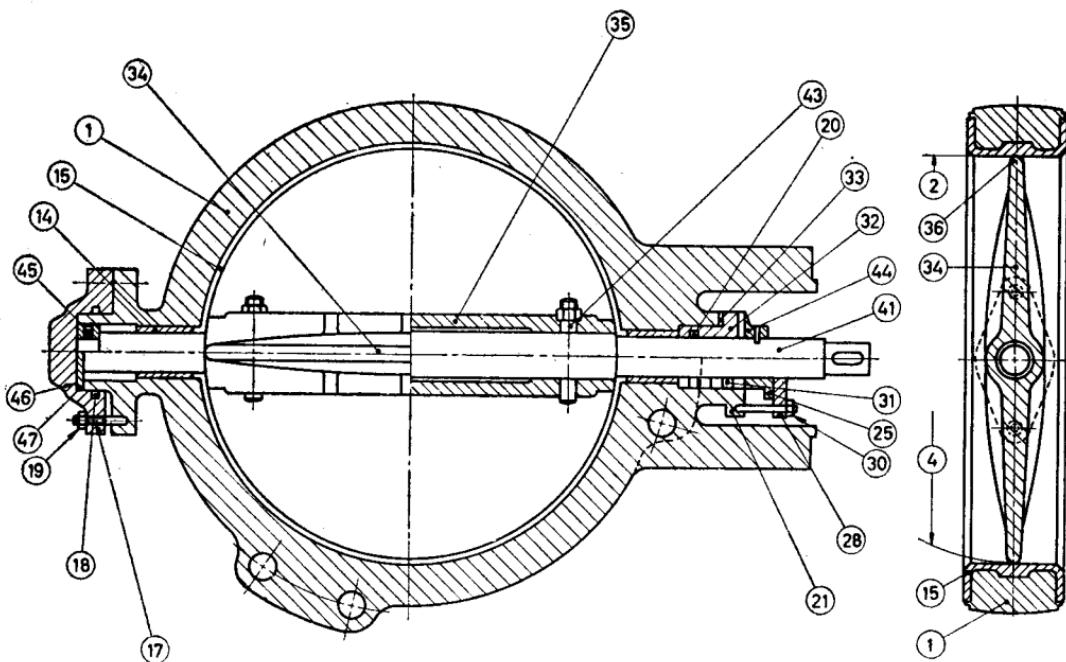


FIG. 1 TYPICAL FLANGED TYPE BUTTERFLY VALVE

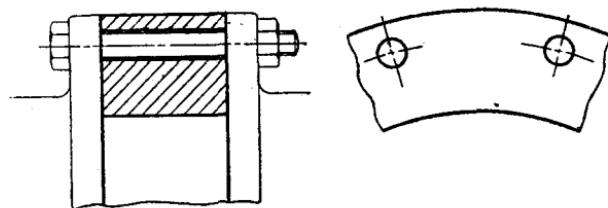




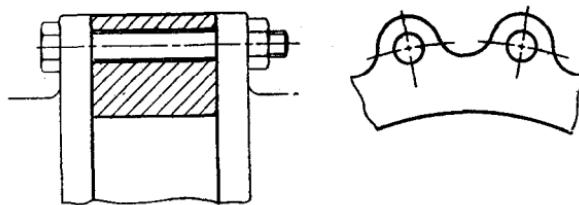
DISC IN OPEN POSITION

DISC IN CLOSED POSITION

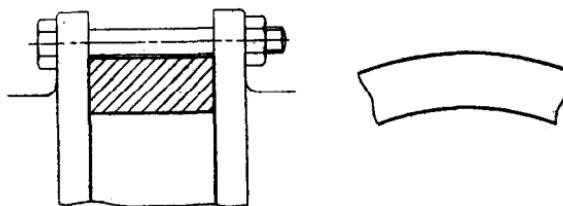
FIG. 2 TYPICAL WAFER TYPE BUTTERFLY VALVE



3A SINGLE FLANGE TYPE



3B LUG TYPE



3C FLANGELESS TYPE

FIG. 3 TYPES OF WAFER BUTTERFLY VALVES

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INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mol	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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R 14 Yudhister Marg, C Scheme	JAIPUR 302005	6 98 32
117/418 B Sarvodaya Nagar	KANPUR 208005	4 72 92
Patliputra Industrial Estate	PATNA 800013	6 28 08
Hantex Bldg (2nd Floor), Riy Station Road	TRIVANDRUM 695001	32 27